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ABSTRACT

A study examined the role of critical reflection in one particular writing context--that of collaborative planning. Subjects, 22 college freshmen enrolled in two core composition courses, were audiotaped as they planned course papers with a peer. Students formed pairs each consisting of a "writer" and a "partner" (supporter). The partner asked questions and encouraged the writer to develop his or her plan, aided by a set of rhetorical prompts. After completing the exercise the partners switched roles and repeated the process, thus giving each a chance to experience the collaboration from both sides. Transcripts were coded for reflective comments and were holistically rated for quality. Results indicated a significant correlation between the amount of reflective conversation and the quality of students' plans. Results also indicated: (1) students used reflection to identify problems, to search for and evaluate alternative plans, and to elaborate ideas through the process of justification; (2) problem-solving was most effective when reflection was sustained over many conversational turns; and (3) collaboration did not guarantee reflection. Findings suggest that how students represent collaboration and the writing assignment itself will determine whether and how they reflect on their own ideas. (Two figures and 2 tables of data are included; a list of 61 references is attached.) (RS)

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CENTER FOR THE STUDY OF WRITING

Technical Report No. 52

PLANNING TEXT TOGETHER: THE ROLE OF CRITICAL REFLECTION IN STUDENT COLLABORATION

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Linda Flower
Joseph Petraglia

September, 1991

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Abstract

Writing instructors often assign collaborative writing activities as a way to foster reflective thinking; many assume that the very act of explaining and defending ideas in the presence of a responsive audience actually forces writers to take critical positions on their own ideas. This paper questions this assumption by examining the role of critical reflection in one particular writing context--that of collaborative planning. Our observations address three questions: *When students collaborate on plans for a paper do they necessarily reflect critically on their own ideas and processes, as many advocates of collaboration might expect? If and when students engage in reflection, does it make a qualitative difference in their writing plans?* And finally, *How do student writers engage in and use reflection as they develop plans?* Twenty two college freshmen were audiotaped as they planned course papers with a peer. Transcripts were coded for reflective comments and were holistically rated for quality. Our analysis revealed a significant correlation between amount of reflective conversation and the quality of students' plans. Students used reflection to identify problems, to search for and evaluate alternative plans, and to elaborate ideas through the process of justification. This problem-solving was most effective when reflection was sustained over many conversational turns. Collaboration did not guarantee reflection, however. Some sessions contained no reflective comments and some students used collaboration in a way that undermined reflective thinking. This study suggests that how students represent collaboration and the writing assignment itself will determined whether and how they reflect on their own ideas.

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PLANNING TEXT TOGETHER: THE ROLE OF CRITICAL REFLECTION IN STUDENT COLLABORATION

Lorraine Higgins, Linda Flower, and Joseph Petraglia
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Critical Reflection: Its Function and Intellectual Value

The progressive educator John Dewey (1933) once argued that human intelligence is cultivated through reflective thinking. When individuals examine and test their ideas for a purpose, they are better able to use their knowledge in informed and self-directed ways. Dewey explained, "By putting the consequences of different ways and lines of action before the mind, it [reflection] enables us to *know what we are about* when we act" (p. 17).

Today, educators have recognized that reflective thinking enables students to assess and adapt their thinking as they carry out intellectual tasks. Reflection plays an integral part in independent problem-solving and self-regulated learning (Bandura, 1986, 1989; Zimmerman, 1989; Bransford, 1979; Bransford, Sherwood, Vye, & Rieser, 1986), helping students transfer and apply their knowledge and skills to situations beyond the classroom.

While most educators would not debate the educational value of reflective thinking, some have debated how it operates and the conditions under which individuals are likely to engage in and benefit from reflection. Cognitive theorists have discussed reflective thinking in terms of *metacognition*,which includes both knowledge of the task and of one's own cognitive resources, and *monitoring*, the ability to control and regulate one's own thinking. Flavell (1979) argued that metacognition is often tacit but may rise to awareness when individuals experience difficulty with a task. For example, when readers sense that they are having trouble with a particular passage, they may call on their knowledge of task goals (e.g., to learn the main points in a text) and potential strategies (e.g., look for the topic sentences). In contrast, Paris (1988) argued that it makes little sense for educators to distinguish between tacit knowledge of goals, tasks, and strategies and conscious use of this knowledge, because we can only hope to observe and teach what is consciously used. For Paris, metacognition is both the knowledge and the monitoring activity that we can talk about. Brown (1985) agreed that disentangling the two may be impossible, arguing that knowledge of cognition and regulation of cognition work together. In this paper, we use the term critical reflection to refer to a particular act of metacognition in which *individuals engage in evaluative thinking about their own ideas and processes as they work through an intellectual problem.* We assume that such reflection requires some level of awareness of a task and of one's own approach to it; however, reflection goes beyond self-awareness: when individuals engage in reflection they use their awareness to evaluate their own thinking in order to achieve some goal.

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Research on metacognition in reading tasks (see Garner, 1987 for an overview) illustrates some ways in which awareness and monitoring may interact. Good readers keep track of their understanding, note difficulties, and consciously reflect on task goals when they feel they do not understand; poor readers do not (Palincsar & Brown, 1984; Brown, Campione & Day, 1981). Paris, Wasik & Turner (in press) explain that poor readers do not fail to reflect on their own process; rather, they use reflection in inappropriate ways. They explain that young readers often view reading as a decoding task rather than a meaning-making enterprise; as a result, such readers often don't know when they have failed to comprehend the gist of a text. Their monitoring is often focused at the level of understanding individual words rather than reflecting on the larger meaning of a passage. This research suggests that reflection as self-directed monitoring is not in itself a valuable activity; its benefits may depend on whether the individual also has an appropriate understanding of the task.

While many thinking tasks are fairly automatic in that they are well-practiced and require little self-conscious reflection, researchers have discovered that reflection is likely to occur under difficult or unfamiliar task conditions (Flavell, 1979; Perkins, 1981). As we struggle with choices about how best to approach difficult tasks, the goals we set and the strategies we engage in become salient to us. This heightened awareness allows us to keep track of what we are doing and how we are doing. However, this self-consciousness may not be efficient or necessary when a task is going smoothly. Reflection may surface, submerge, and resurface as individuals carry out a particular task.

Overuse of reflective activity may hinder success in certain tasks. For example, when second language learners monitor their use of a foreign language too closely (e.g., when they constantly check the rules of correct usage), they may have difficulty developing fluency in the language (Krashen, 1981). Duemler and Mayer (1988) have found hidden costs of critical reflection in scientific reasoning tasks as well. For science problems that require creative brainstorming, too much critical evaluation too soon can prematurely cut off hypotheses that might eventually prove useful to problem solvers.

Critical Reflection and Writing

Because writing has been recognized as a typically ill-defined and complex form of problem-solving (Flower & Hayes, 1981), one might expect that reflection would play a critical role in writing tasks. Many writing situations do not require the automatic application of a set of skills or conventions; rather writers must infer the specific goals of a "rhetorical situation" (Bitzer, 1968), monitoring and adapting their ideas and strategies to meet those demands. Complex tasks of this sort can be rich sites for reflective activity, yet ironically, the role of reflection in writing has not been as widely studied as it has been in reading and general learning tasks.

As in other problem-solving tasks, overuse of reflection in writing can sometimes hinder performance. When writers scrutinize every move, their writing may take longer than necessary or they may become so self-conscious that they cannot even finish a sentence. At other times, they may expend too much effort reflecting on low-level features of writing (e.g., grammar and punctuation) at the expense of more global features (Rose, 1980).

Because not all writing situations are equally demanding, constant attention to and reflection on one's process is not always necessary. There are many instances when

constant reflection is not required, for example, when writers engage in familiar or well-supported tasks, slotting information into proven text formats or telling what they know about a subject. In these cases, writers can use existing text structures, the structure of a genre or their own knowledge to select information and present it to a reader. While each of these tasks may require writers to transform information to some degree, the transformation is relatively routine and the writer's planning and composing may require little reflection.

In contrast, some writing situations may be so novel that a writer cannot simply call on a practiced text convention or familiar schema. Much of the writing students face in college cannot be carried out by invoking the summary or personal response formats learned in high school (Curtin, 1988; Applebee, 1981, 1984). College students often must adapt what they know or what they have read to a variety of purposes in their courses, purposes other than recitation. They may be asked to interpret, evaluate, or apply their knowledge to specific problems and issues. Flower, Schriver, Carey, Haas, and Hayes (1989b) argued that this type of writing may require a great deal of *constructive planning* in which writers create and integrate a complex network of goals and strategies. The experienced writers they studied engaged in a good deal of self-consciousness as they planned for this kind of writing. They frequently monitored their understanding of the writing task, the goals they set, and the ways in which they selected and adapted their ideas for the audience. A study by Durst (1989) also suggested that complex writing tasks can involve more self-monitoring. He found that high school students engaged in more monitoring when they tackled written analyses than when they wrote summaries of assigned texts. Students seemed to invoke and automatically apply their knowledge of summary writing with a fair amount of ease. The analysis task involved more self-awareness and monitoring overall. Moreover, the bulk of this reflective activity occurred in the planning stage of writing analyses, where students reflected on the demands of the analysis task and their understanding of the topic.

Scardamalia and Bereiter (1987) have shown that novice writers often resort to "knowledge-telling" when they attempt more difficult writing tasks; that is, they funnel what they know about a topic straight into composing, without selecting and adapting topic knowledge around specific task goals. For these writers, no dialectical relationship holds between their topic knowledge and their rhetorical knowledge. These writers do not reflect on topic information given their unique goals and plans. The research of Burtis, Bereiter, Scardamalia and Tetroe (1983) may give us a clue as to why. The younger writers in their study did not create abstract goals and plans in the first place; they produced outline-like text fragments instead. More experienced writers, on the other hand, created plans in the form of abstract, rhetorical goals, which looked less like the texts they eventually produced. They used these goals to reflect on, select, and adapt relevant subject matter.

Reflection can play an important role in helping students move out of knowledge-telling and into knowledge-transforming. Scardamalia and Bereiter (1987) provided students with prompts in the form of index cards (e.g., *elaborate, improve, consider alternative or new ideas, consider goals or purpose, and put these elements together).* These prompts helped students reflect on subject matter knowledge in light of rhetorical concerns and specific writing goals. Observations of students' notemaking, planning, and revising suggested that those students who had received the reflective prompts were more likely to transform and adapt subject matter knowledge around rhetorical goals rather than present their knowledge unaltered. But reflection may not limit itself to subject matter knowledge. Expert writers also reflect on their writing goals as they attempt to consolidate their knowledge about audience, purpose and strategies. Expert

writers in a study by Flower et al. (1989b) often recognized and resolved conflict at the level of abstract goals and plans, while novice writers tended to resolve conflict only at the level of the text—what they would actually say. For difficult writing tasks that require constructive planning, it may be important to reflect on and refine both topic knowledge and rhetorical knowledge, the ideas one formulates for text as well as the larger goals that one infers and constructs from a particular task.

Collaboration: A Context for Fostering Reflection?

Although research suggests that complex writing tasks often demand reflective activity, we still have much to learn about the role it plays in student writing and whether it is possible to encourage reflection in the classroom. What kind of learning conditions might encourage reflection? Many composition teachers now assume that collaboration in its many forms—from discussion groups to peer editing to coauthoring—provides an ideal context for fostering reflective thinking. Teachers assign these activities hoping they will help students reflect on their own ideas and writing processes.

Almost by its very nature, collaboration is assumed to involve reflection at some level. Bruffee (1984) argued that peer discussion externalizes writers' thinking, making students' ideas and writing processes more available for scrutiny. Indeed, addressing a peer may give writers the opportunity to articulate their reasoning and perhaps become aware of shortcomings and strategies they did not think of on their own. But even if such interaction can heighten students' awareness of their writing plans and choices, awareness itself may not insure that students will reflect critically on those choices.

Some have argued that collaborative conflict can trigger critical reflection. When a collaborator disagrees, a student may have to reassess his or her thinking in light of the competing viewpoint or approach (Johnson & Johnson, 1979; Forman & Cazden, 1985). This assumes that the writing partner or respondent can be a stimulus, prompting the writer to reflect on his or her own ideas or prose. In a study of joint problem-solving, Perret-Clermont (1980) argued that self-assessment and cognitive reorganization is often initiated when partners initially hold different views. But as Forman and Cazden (1985) pointed out, these conclusions are based on studies that *assign* collaborators alternative perspectives and stipulate that they *must* reach consensus. In natural collaborations, the importance of cognitive conflict would depend on the kind of interactions students actually have. Do the students disagree with each other and, if so, will they express it? Is consensus absolutely necessary when the text is singly authored and the role of the collaborator is to give support and advice? When conflict emerges, is it resolved, ignored or circumvented? We would expect that these variables affect both the presence and the role of reflection and a student's (possible) subsequent revision of ideas.

Peer cooperation, not conflict, may also enhance reflection. Research in cooperative learning suggests that a partner may extend a person's resources for spotting and working on task problems. The partner extends the problem-solver's choices and provides a range of alternatives from which to draw. Forman (1981) looked at collaborators solving chemical experiment problems and found that those engaging in "cooperative interaction" (in which both partners reflect on ideas and coordinate work) were more likely to carry out strategies necessary for solving harder problems. Indeed, cooperation may help a writer achieve what he or she can not yet achieve but has the potential to achieve with external support (Vygotsky, 1962). Awareness of *alternative* points or strategies, not necessarily *rival or opposing* ones, may enlarge a writer's

repertoire and help him or her to view his or her approach as a choice among options and to discriminate among those choices.

The benefits of collaborative awareness, conflict, and cooperation are difficult to track. Although some researchers have attempted to evaluate pre- and post- products to measure individual performance before, with, and after collaboration, the results of these studies are highly inconclusive, probably because the kind and structure of the collaborations and the writing tasks themselves vary so widely from one study to the next (Smit, 1989; Higgins, 1989). Nevertheless, many teachers value and promote collaborative writing *because* they assume it naturally produces reflective thinking through the type of interactions described above. In the remainder of this paper, we explore this assumption, discussing a study that investigates whether and how student writers actually engaged in reflection as they collaborated on plans for a course paper.

The Role of Reflection in Collaborative Planning: Purpose and Context of the Study

This observational study examines the role of critical reflection as students planned a paper with the help of a peer. It is not our purpose here to "test" collaboration as a method of teaching reflection or to argue that collaborative planning itself causes critical reflection in writing. Rather, we assume that this learning context provides an invitation to engage in reflection and an opportunity for us to observe whether students accept the invitation and how and why they might or might not do so. "Collaborative Planning" (Flower, Burnett, Hajduk, Wallace, Norris, Peck, & Spivey, 1989a) is a planning activity directed by students and structured by a set of rhetorical thinking prompts. As such, it appears to meet many of the criteria teachers associate with productive reflection. Students are asked not only to think about but to articulate, develop, and connect their topic knowledge and rhetorical goals for a paper in the presence of a responsive peer.

The study addresses three questions:

1. Does peer planning *necessarily* involve critical reflection, as many advocates of collaboration might expect?

2. If and when students engage in reflection, does it make a qualitative difference; that is, can reflection help them develop and refine writing plans?

3. How do student writers engage in and use reflection as they develop plans?

We asked a group of first-year college students enrolled in two core composition courses to engage in collaborative planning with a partner. The partner (supporter) asked questions and encouraged the writer to develop his or her plan, aided by a set of rhetorical prompts which were embodied in a figure called the "Planner's Blackboard" (see Figure 1). This figure worked as a visual metaphor, picturing a set of four areas or smaller "blackboards," prompting students to develop plans for: the *purpose or key point* of their writing, their intended *audience*, relevant *text conventions* they might consider using, and topic *information*. The two partners then switched roles so the second writer had a chance to talk out his or her plan.

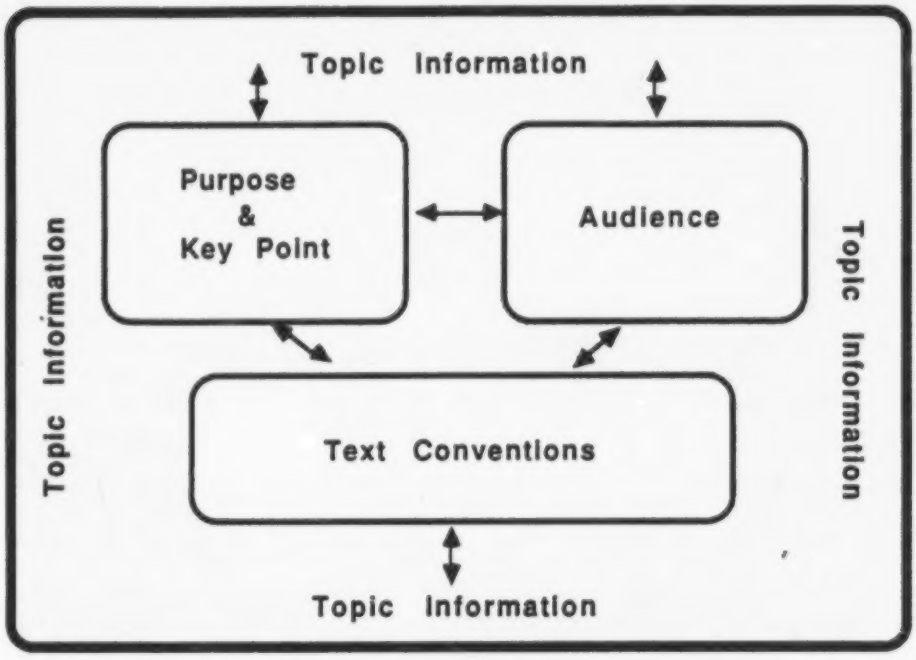

Figure 1. The planner's blackboard.

Note that the three blackboard areas in the foreground highlight rhetorical issues such as purpose and audience, issues that inexperienced writers often ignore (Carey, Flower, Hayes, Schriver, & Haas, 1989). Moreover, the method reminds students to *consolidate* their plans periodically (symbolized by the arrows linking the blackboards to one another). Consolidation is a move whereby writers interrelate multiple aspects of the plan. For instance, they might consider how to adapt their *key point* to the interests or needs of the *audience* or how different ways of organizing the paper (*text conventions*) might help them carry out their *purpose*. This consolidation prompt is an important feature of the blackboard because inexperienced writers often do not review and forge links among rhetorical and topical plans as experienced writers do (Flower et al., 1989b). Thus, collaborative planning can be used as a means of social support and as an instructional aid for moving students beyond topic information and into more rhetorical, constructive thinking.

Early in the course, students attended one class in which the instructor modeled the role of planner and supporter and another which introduced the four areas of the planner's blackboard as a prompt for doing more rhetorical planning. Students then used collaborative planning on the first course paper. For the second course paper, which we examine here, students were asked to find and address a "discourse problem" in their own lives or in an actual discourse community—an assignment which was central to the course's focus on problems freshmen students face as they enter new discourse communities at college and on defining real problems and conflicts in such rhetorical situations. In addition to this practical emphasis on defining and addressing real problems for fellow students and other participants in these communities, this assignment asked students to use and adapt source texts, chapters eight and nine from Peter Farb's *Word Play*, which discuss how language and conceptual labels affect what we see and

know. This assignment, through its emphasis on real-world problems and through its explicit directions; asked students to transform source texts in a purposeful, rhetorical way. Students were asked to consider:

> a realistic "discourse" problem you or other students encounter. As you plan the paper, give some thought to your own purpose in writing the paper. Sometimes people analyze a problem in order to think a question through for themselves. Or in order to explain a problem or issue to someone else. Or maybe to discuss a possible solution to a problem or even to persuade readers to act on one solution. Decide on your own purpose, let your reader know what it is, and use it to organize your paper. What do you want to accomplish in this paper?

The papers were to be evaluated on four criteria students received in advance:

1. Did you apply your reading to a real discourse problem or an issue which you define in the paper?

2. Did you use the material from Farb's book for a purpose of your own, and did you make your own purpose as a writer apparent to readers?

3. Did you use your purpose and/or your sense of a problem to organize the rest of the paper? Is each paragraph relevant to your purpose and to the logical development of your analysis?

4. Did your paper meet college-level standards for correctness and style?

Students were urged to keep the rhetorical issues represented by the blackboards in mind as they planned this assignment alone and later as they met to develop their plans with a partner.

One might imagine that these planning sessions would be a useful place to observe reflection, especially because the method and task invite students to transform and adapt their reading for a particular discourse community and purpose.
The initial, private planning stimulates an awareness of plans, while the additional collaboration gives students the opportunity to reflect and elaborate on plans with a responsive, questioning partner. One might also expect that the consolidation prompt would invite reflection in that it asks students to consider the relationship between topic information, text conventions, and the purpose and audience they have stipulated. Consolidation might help students check the consistency and coherence of their plans and to identify gaps or contradictions in them.

The collaborative sessions (held by most students in their dorm rooms) were tape recorded and transcribed. The 22 students we discuss here (10 from one class, 12 from the other, out of the total of 36) were those students who handed in a complete set of three tapes and papers over the semester. Only the second paper and collaborative session will be discussed here. These tapes made students' reflection "visible" to us in a way that is less artificial and intrusive than protocol methods, which ask students to think aloud while writing or planning privately.

One purpose for the tapes was to observe how students interpreted and attended to the rhetorical prompts highlighted by the blackboards. An initial analysis of these data used the planning blackboards as a coding scheme, to determine how students responded to such a prompt. That initial analysis, which gives a background for our present discussion, is discussed in two related reports (Petraglia, Flower, & Higgins, in prep.; Flower & Higgins, in press) but will be briefly summarized here. A second analysis of the data focused on reflection, the subject of this paper. The reflection analysis employed a coding scheme to observe the presence and frequency of reflection, quality ratings for each planning session, and a descriptive analysis of reflective patterns that emerged in the taped discussions. This information allowed us to observe whether and how students engaged in reflection and whether reflection led to high-quality planning.

Some Initial Findings: Students' Focus of Attention

As background to our discussion of reflection, we first summarize relevant findings from our initial analysis, which described the ways in which students used the planning prompts. For a fuller discussion of this analysis, see Flower and Higgins, in press. We were interested in the proportion of students' planning devoted to the four planning blackboards, especially the rhetorical blackboards, those pertaining to purpose and audience. Transcripts of the sessions were produced, each conversational turn constituting a numbered episode. Each episode was coded in terms of the blackboards, for example, whether the episode referred to audience, purpose, text conventions, and so on. An additional category was created for episodes that contained no substantive information, for instance, comments unrelated to the task, simple requests for blackboard information (e.g., "What's your purpose?" or "Who's your audience?"), and other general process comments (e.g., "O.k., we're done"). Interrater reliability for this coding, using 20% of the data, was 73% (Cohen's Kappa). Episodes coded in this analysis included both writers' and supporters' comments.

As Figure 2 shows, these students did not behave like the novice writers described by Scardamalia and Bereiter (1987) and by Flower et al. (1989b). In this context, students moved beyond discussion of topic information alone, focusing a great deal of attention (roughly 39% of their planning) on purpose/key point and some attention to audience as well (19%). However, a closer look reveals that students' planning at this phase of their learning is more of an approximation to expert planning than an equivalent to it. While these students do not resemble the knowledge-telling writers described by Scardamalia and Bereiter (1987), we discovered that they did not always interpret purpose and audience in the same ways that expert writers often do.

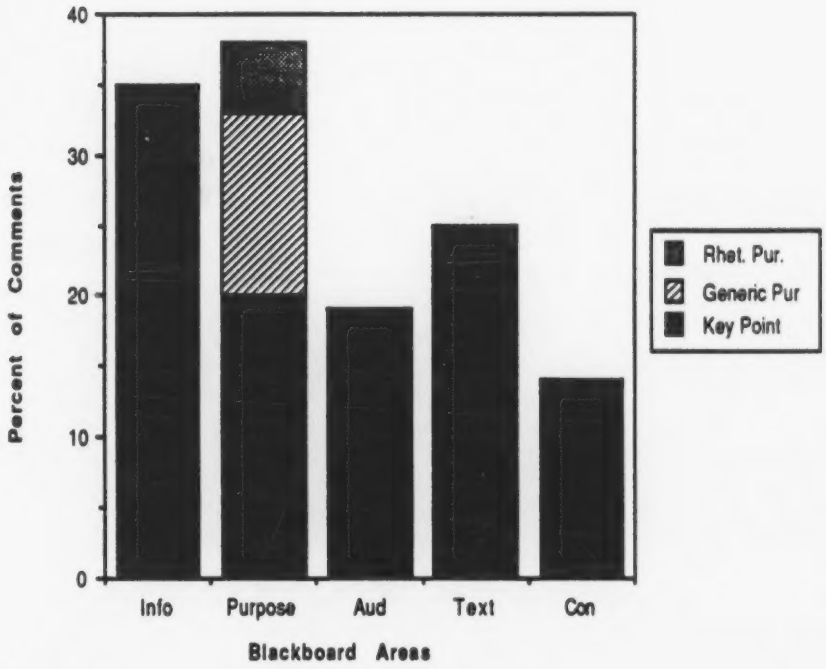

Figure 2. Focus of attention in student planning.

Students often interpreted their partners' requests for purpose as a call for a thesis statement—what they would *say* in their texts as opposed to what they hoped to *do*. That is, many students simply responded that their purpose was to say something about the topic rather than to use information for a specific effect. We coded students' key point or thesis remarks (what they planned to say directly in their papers) separately from more purposive remarks concerning what they hoped to do. We discovered that nearly half of students' comments on purpose related to their thesis statements or key points. A total of 20% of their planning dealt with this issue of what to say. When students did comment on what they hoped to do, they often described a "generic" purpose, one designed to produce a certain kind of paper rather than to achieve a more specific rhetorical effect. For example, "My purpose is to write a problem-solution paper" or "My purpose is to write my feelings on..." or "I want to compare and contrast..." represent generic purposes. Finally, we coded a third type of purpose, what we call a "rhetorical" purpose. These comments indicated a more specific or unique purpose adapted to some particular end. For example, one student wanted to convince high school students that they would need to use many different writing styles across their college courses, "so they can catch on to this, to these differences sooner than I did." He then provided some evidence he planned to use—how his English course required a different kind of paper than his engineering course. While 13% of students' planning was devoted to generic purposes, in the end only 5% of their planning was devoted to the kinds of rhetorical purposes so often considered in expert planning. Nearly all of

students' "purposive" remarks either described what they would say or what form the paper would take rather than the effect they wanted to produce.

In the context of a college writing course, deciding on a thesis and writing in a particular genre are certainly legitimate ways to direct the purpose of one's writing. What is interesting here is that this particular writing course also valorized the creation of personal, intellectual, or audience-based goals for a text and attempted to teach this type of thinking as an important part of planning. The assignment itself (adapt Farb's ideas to address an actual discourse problem) and the criteria for evaluation clearly invited thinking about rhetorical purpose. However, even with these prompts, most students did not develop rhetorical purposes, but instead based their plans around a thesis statement taken from the reading or around a specific text type or genre.

Although students also devoted a fair amount of attention to audience, their discussion of audience was often limited to identifying one rather than identifying some need or other quality thereof, considerations that expert writers often attend to. Many students simply named a possible audience—people who might be interested in their topic— rather than tailoring and testing their claims around the needs and problems of a reader. Comments about audience were rarely linked to decisions about form, content, and purpose; therefore, we assume that audience apparently had little impact on shaping the ideas for these essays. Again, we recognize that many school-based writing tasks are primarily information-centered and that the teacher often "stands in" for a general reader. However, this particular assignment did make an explicit request for audience adaptation, a request that was sometimes but not always met by many of the students.

These students are at an interesting juncture; they do not quite fit the profile of novice planners, and yet they do not quite fit the profile of expert planners either. In the process of learning to plan more complex kinds of texts, texts that must adapt information in purposeful ways, these students seem to stand at a crossroads. Certainly the context of writing in school may have strongly influenced students' approach to planning, in particular the ways in which they attended to audience and purpose. We discussed this possibility at some length in other reports of this research (Flower & Higgins, in press; Petraglia, Flower, & Higgins, in prep.). Our question here is: How will students at this phase of their learning employ reflection, students attempting to tap issues of purpose and audience in ways that neither expert nor novice profiles have yet accounted for?

Examining the Presence and Role of Reflection

Does peer planning necessarily involve critical reflection?

Given the way in which students focused their attention in these sessions, to what extent did they engage in reflection? In answering our first question, our analysis makes an important distinction between critical reflection and awareness. Although *mentioning* one's plans indicates awareness and although awareness may have to precede critical reflection, we think it necessary to be rigorous in distinguishing between these two processes, especially in a study of planning. In a protocol study, Durst (1989) coded as monitoring any remarks in which writers reflected on the significance and appropriateness of their ideas and actions, as well as remarks in which students showed awareness of the task or of their goals and strategies. We chose a more conservative coding scheme, and considered as monitoring only remarks that went beyond awareness or overt mentioning. We did this because students who are explicitly asked to discuss plans (as in this context) will automatically become "aware" of their goals and ideas;

however, they may not necessarily engage those goals and ideas in a critical way. Awareness is not synonymous with reflection. We coded each conversational turn (episode) in the transcripts as reflective or non-reflective. Reflective comments were defined as comments including one or more of the following features:

- an explicit evaluation of plans
- explicit comparison or consideration of alternatives and choices.
- explicit reasoning or justification for plans

Given the overlap of these features in a single episode and their intermingling within a comment, we chose not to pigeonhole reflective comments as one type or another or to tabulate the number of justifications versus the number of alternatives or evaluations. We coded all transcripts, two of us coding each session independently. Reliability for the reflection coding was .89, based on pairwise comparison. After reliability was assessed, we met to negotiate disagreements.

Reflection took three forms in student planning, the most obvious of which was *evaluation or problem identification.* Although short positive evaluations such as "yeah" or "good" were common, they often functioned simply to move a discussion forward and were not coded as reflective. Positive evaluations were coded as reflective only when they were more substantive, as in this writer's remark: "In fact, that's a good idea, because what—what I could be doing is taking something that I've read and applying it to something that's relative in our life or our community." On the other hand, negative evaluations (even those expressing a simple "no') always indicated some critical consideration of the choices being articulated, for example, "It doesn't seem like much of a point to me" or "That'd be very—too hard." At other times, students recognized a need or gap in the network of goals, plans, and criteria they had created, which also implied reflective evaluation.

In addition to problem identification and evaluation, students engaged in a second form of reflection as they generated and compared *alternative plans and ideas*. In the example that follows, the supporter suggests an alternative language problem that Fran might write about. Previously, Fran had considered addressing problems with foreign language translation. Here, the two partners reflect on another possibility—writing about language differences in geographic communities:

Bob *...What you could do is maybe compare the Northeastern society with one that's supposedly more relaxed.*

Fran *I could do that, but I don't really know enough about the societies to really make it..I don't know how I could find these things out to make it really substantial.*

Adversatives such as OR and INSTEAD often implied a critical choice or comparison between options. Additives, as in a string of possible ideas (e.g., and maybe I'll do this and this...or this...) indicated an awareness of options but no deliberation about them, especially when options were named but not discussed or explained at length. We, therefore, took a conservative line when coding, marking only those alternatives that were discussed at length or compared to other choices.

A third form of reflection emerged as students *justified their choices*. BECAUSE, SO, and SINCE were often linguistic markers of this move. Students not only justified what they wanted to say (their main points) but also justified their choice of purpose, audience, and text conventions. Below, a writer justifies why psychologists might be a good audience for her topic, inaccuracy in story telling:

> **Jennie** *I think a lot of psychologists or psychology majors especially are gonna be interested in this, SINCE maybe speakers when they relate past events, they do - they change it subconsciously.. I think the psychologists would be interested in how their mind twists things around.*

The students, on average, devoted nearly a quarter of their sessions to reflection. (See Table 1). However, contrary to assumptions in the literature, collaboration did not *necessarily* bring about critical reflection. Two pairs of students engaged in none at all, even though they attended to the blackboards (they were on task), while four more pairs produced only one or two reflective comments during the entire planning session.

Student's Session	*No. Reflections*	*% of Session*
Jennie	39	31
Liz	37	36
Carter	34	25
Han	29	45
Patrick	28	37
Paul	28	31
Fran	27	48
Kate	19	33
Vince	17	17
Ron	12	17
Bob	11	28
Ben	11	14
Gary	8	42
Linda	7	18
Tracy	6	14
Tomas	4	4
Lisa	2	13
Laura	2	8
Janine	1	4
Chanda	1	3
Yun Ho	0	0
Sara	0	0

Table 1. Number of reflective episodes and percentage of planning session devoted to reflection.

This information provides a basic picture of what happened: some students used reflection while others did not. This finding in itself challenges the assumption that collaboration will necessarily induce reflective thinking. But these results raise some

additional, secondary questions: Why is this so? What contributes to these individual differences?

One advantage of descriptive data of this sort is that it allows us to get behind the scenes, to observe the logic behind students' performance. If we go beyond the numbers and begin to look at how these students approached peer planning, we begin to understand these individual differences, and more important, the possible logic behind them. In what follows, we use our observations to sketch out three possible sources that may influence whether and how students engage in reflection. These include the way students represent collaboration, the way they represent the goals of the writing task, and the degree to which they are aware of these goals as they plan.

We noted at least two distinct interpretations of collaborative planning, which may have influenced students' reflection. We call these the "checklist approach" and the "interactive approach." Consider, for example, the following excerpt from Yun Ho's planning session. For the sake of brevity and for the purpose of highlighting the Supporter's role, we have excerpted the writer's responses so that the example shows the complete set of comments made by Mike, Yun Ho's supporter. This and the remaining examples include our coding in brackets following each episode (see key). Reflective episodes are italicized. When we look at the entirety of Mike's input, we can see that he is using the planning blackboards as a checklist. Note how many of his comments were coded as "non-substantive" [O] because he merely mentions a category such as audience without any propositions about it. In this case, Mike seems to interpret collaborative planning as a means of checking on whether his partner has "filled in" the blackboards.

KEY: Each turn is numbered. Reflection is in italics. Blackboard codings are labeled thus: A=Audience, R=Rhetorical Purpose, G=Generic Purpose, KP=Key Point, I=Topic Information; and T=Text Convention. Consolidations are noted with slashes (/). O=Off-task or Non-substantive Question/Comment.

Example 1. The "Checklist" Approach to Collaborative Planning: Mike's Question to Yun Ho (writer)

Mike 1. Okay, Yun Ho to start off with, what is the key point of your paper, what's the purpose? [O]

Mike 3. Okay, okay, so in other words your paper is on how certain words in English do not have meanings in other languages? [KP]

Mike 5. So, is color which was used in Farb, is that your only example, I mean, do you have anything else? [T]

Mike 7. Hold on a second, Yun Ho, my phone is ringing. Okay, we're back. As you were saying Yun Ho, some other ideas? [O]

Mike 8. So, let's see your topics then would be words that just don't directly translate, cliches and phrases. [I]

Mike	10.	Are there any others? [O]
Mike	12.	Okay, let's go on to the next thing. You're talking about your audience, your audience is going to be... [O]
Mike	14.	Okay, so...I'm going to skip over text conventions first, save that for last. How are you going to organize all of this? [O]
Mike	16.	Okay, but what I was talking about was, do you have any idea on how you're going to organize the whole report? [O]
Mike	18.	Okay, then Yun Ho, is there anything else you might want to add, like some other ideas that you've been thinking about? [O]
Mike	20.	Okay, then, well that's the end of this interview then. [O]

Mike turned the planning blackboards into a list of questions, going through each as he would a checklist, until he obtained all the information under each question. After Yun Ho states his key point, Mike asks for examples and checks to see if he has heard them all ("anything else?"). He then repeats Yun Ho's response, checks again, ("any others?") then moves on to the next blackboard (audience) and finally repeats the procedure with the text convention blackboard. This approach gave Yun Ho the opportunity to recite his plan, and in doing so he was no doubt made aware of his key points, audience, and plans for organization; however, this approach did not help this writer reflect critically on his plans; Yun Ho's session contained zero reflective comments.

In contrast, Patrick, Liz's supporter, assumed what we call an "interactive" approach. In Example 2, Liz, the writer, introduces her key point: different discourse communities have trouble communicating due to their specialized terms and vocabulary. Below, Patrick notes that Liz's thesis simply paraphrases the source and that she is not using the source in a unique way (a requirement of the assignment).

Example 2. The "Interactive" Approach to Collaborative Planning: Liz (writer) & Patrick

Patrick	*Right, that is a problem, I agree. But, don't get bummed out with me, but I mean do you have a, are you gonna suggest a solution or anything, that sort of sounds that you're in a way repeating what he [Farb] says. I don't know—you know what I mean?* [G]
Liz	Aha. [O]
Patrick	*I mean I'm not sure, but ah, I mean if you could think of something that would help this out maybe, or summarize it in a way, do you know what I mean?* [G]

Liz *Or, I could just..I think maybe what I'll do is use some of my own insight as far as I like maybe—as far as problems I run into. You know..Like..I mean, I'm not really sure how...* [G]

Although Yun Ho had the same problem (his thesis was also borrowed directly from Farb), his partner did not comment on it but, instead, moved on to the next blackboard. Liz's partner, however, does comment on this problem; in turn, Liz responds to his evaluation with an alternative ("use some of my own insights"). In this interactive session, we see these writers commenting and responding to each other's insights about the evolving discourse plan. They not only rise to awareness of Liz's goals and purposes, but also reflect on them. Over one third of Liz's session was coded as reflective.

We can see that structured collaboration of this sort can easily elicit writers' awareness of their ideas and plans, but whether they or their partner will go beyond awareness and begin to reflect critically on the plans may depend on the roles they assume and their vision of the collaboration. Other researchers have argued that interactional patterns may affect the kind and quality of work students do (Smit, 1989; Lunsford and Ede; 1986, Freedman, Burnett, & DiPardo, 1987). Nystrand (1986) showed that different students represent and carry out collaborative tasks differently. Some may be content to find a problem or make a critique, while others may assume that collaboration requires them to work on those problem as well. And certainly some students may assume roles that are more socially acceptable or comfortable, allowing them to be a supportive listener but not requiring them to evaluate or challenge a friend's ideas. Our observations suggest that it may be wishful thinking to assume that collaboration necessarily engenders productive thinking of any sort; for the very nature of collaborative work can vary from one group of students to the next.

We also realized that these differences in reflection may have to do with the way students represent the goals and criteria of the writing task itself. As we noted earlier, students interpreted the purpose of this assignment in very different ways. Many students interpreted purpose simply as a call for a thesis statement and subsequently borrowed an idea from Farb and reported on it. They did not create a unique rhetorical purpose that would allow them to adapt Farb to a particular language problem or community. Yun Ho and his supporter, Mike, may not have recognized that the assignment called for more than a report on a thesis from the source text. If this is indeed how they understood the task, then their lack of reflection on Yun Ho's purpose would be quite logical. It seems plausible that some students' lack of reflection might be due to their inappropriate understanding of the goals of the task, as in the case of the young readers discussed earlier and of college freshmen interpreting the task of reading-to-write (Flower, Stein, Ackerman, Kantz, McCormick, & Peck, 1990).

Of course, some students may be aware of appropriate task goal but may negotiate a different task for themselves, one that skirts reflection and the difficult rethinking and revision that might accompany it. This negotiation might be influenced by time constraints, a student's interest in the topic or an image of what he or she is capable of doing in a course paper. Indeed, students frequently mentioned that they lacked a purpose, but many seemed content or relieved to gloss over the problem, assuring themselves they could still produce an acceptable paper because they had a thesis. We illustrated this negotiating process elsewhere in more detail (Flower & Higgins, in press), but here is one sample of it. In example 3, the supporter comments that he hasn't really

understood the writer's purpose, but both agree that a short paper makes it hard to do anything more substantive:

Example 3. Negotiating the Writing Task: Tomas (writer) & Vince

Tomas: 83. *Well, I don't really—I haven't really developed a purpose. I got a key point.* [R]

Vince: 84. *Yeah. So you don't have any purpose in writing this? It's not to like help people who don't know the meanings of these words?* [R]

Tomas: 85. Well, I mean it would help—it would help people understand why—why there's trouble. I mean there's—there are people who are ignorant and they don't understand that these are problems. [A/G]

Vince: 86. Yeah. I think the paper's a little too short to like... [T]

Tomas: 87. Yeah it's a fairly short... [T]

Vince: 88. To go into anything like in depth. All right... [O]

Whether students are genuinely confused about the meaning of purpose in a particular writing task or whether they negotiate their own meaning, their vision of the task and the subsequent criteria they are willing to enforce can affect whether and how they notice and rethink problems with their plans.

Finally, these transcripts suggest that students' levels of awareness may also account for differences in reflection among the students in this study. Students may be aware of appropriate task criteria *at some level* but may not attend to them in a self-conscious way, which seems to be the case with Liz. Initially, Liz seemed to be unaware that she had not met the requirements of the task, but with a little prompting from her partner she immediately saw it—"Aha." Liz seemed to recognize, at some level, that the assignment required her to do more than paraphrase the source; yet she hadn't consciously controlled and used that knowledge. She needed a partner to help remind her of this need and to push her into productive reflection.

Does Reflection Contribute to the Quality of Students' Planning?

In addressing the second question for our study, two of us independently rated the generative quality of the planning sessions in terms of how well the plans had been developed and refined in the session itself. This was a holistic quality evaluation of the students' planning sessions, based on the question: *If you overheard this planning session as a teacher, how would you rate its general quality, in terms of idea generation and development?* This evaluation was conducted before we coded the transcripts for reflection. In addition, two independent raters judged the sessions for quality. Agreement among four raters, coding each session as high or low in quality, averaged 75% (based on pairwise comparison). We obtained an average quality score for each session by giving the session one point for every high rating it had received from any of the four raters. These final quality scores ranged from zero (low) to four (high). With

these scores we were able to investigate the relationship between amount of reflection and quality of planning. We found that reflection and quality were positively correlated at the .001 level (Mann-Whitney). However, because verbal fluency can lead to longer discussions and because length often determines quality judgment (even though raters were instructed not to judge quality on length of the discussion), we realized that length itself may have contributed to this correlation. We ran a first order partial correlation, holding the effect of length constant and found that, even with the effect of length factored out, reflection was still significantly correlated with quality ($r = .66$, $p < .05$, Pearson r).

While reflective thinking is assumed to be educationally valuable in itself, this analysis suggests a relationship between critical reflection and the development of writing plans. The next section illustrates in some detail just how students were using reflection, but first we wish to raise one final concern with quality: Does reflection in planning help students produce better texts?

Although future research needs to consider whether reflection in planning has any measurable impact on the texts students produce, we offer some caution here. The relationship between one discrete episode of planning and the writing that may follow it may not be a simple, straightforward one. One cannot assume that the plan one observes in one session is always the plan that has informed the text. Students often do subsequent planning that may drastically alter earlier plans. Moreover, situational constraints or personal limitations may make it impossible for students with great intentions to produce the text they had planned to. In the process of learning to write, college students may learn to engage in more complex kinds of planning as they set higher goals and tasks for themselves. This is in itself is a valuable lesson, one that these particular students seemed to be in the process of learning. But it may take some time before students learn to instantiate these complex plans into successful text or to manage these sophisticated goals along with other writing demands. These are just some obstacles in attempting to examine relationships between discrete episodes of planning and single instances of text, obstacles future research will need to consider. In this particular study,we discovered that a high number of ideas (88%) constructed by these writers in response to a supporter's evaluations (within the planning session itself) did surface in the writers' written texts. These ideas surfaced in key places, in the form of important examples, opening paragraphs and the thesis itself. (See Flower & Higgins [in press] for a detailed discussion of this analysis).

How Did Students Engage in and Use Reflection?

The fact that these students engaged in occasional evaluative or ruminative metacommentary is encouraging. But it doesn't tell us if this reflective activity is merely an ad hoc response in collaboration or if students shape reflection into larger, meaningful patterns within planning. Our third question asks about the ways in which students use reflection to develop and generate plans.

One of the most striking patterns in the data was the presence of sustained reflection in the high-quality sessions. Sustained reflection was defined for this study as a series of five or more reflective episodes in succession. All eleven high-quality planning sessions (sessions that received a high rating by two or more raters) contained these larger instances of sustained reflection, averaging over six sustained events per session. In contrast, only two of the eleven low-quality sessions (planning sessions that received one or zero high ratings by the raters) contained instances of sustained reflection, and they averaged two per session. What happened in these longer reflective events, and how did

they contribute to quality planning? We found that the three types of reflection, (evaluation/problem identification, alternatives, and justifications) seemed to work together in these longer reflections, helping students not only detect problems but work on them as well by enabling them to search for alternative paths and evaluate new plans and ideas. This problem solving often led to more developed plans or revised plans that better suited the purpose of the assignment.

We have already examined an excerpt from one on these longer episodes. We observed how Patrick tactfully recognized a *problem* with Liz's plan (she was paraphrasing the source text, not applying it to a problem). Liz responded with a new, albeit fuzzy *alternative* approach—to use her own insights. In the same breath, she noted a *problem*, saying "I'm not really sure how... ." This problem recognition was followed by another reflective event lasting eight turns in which the writers searched for and *evaluated alternative plans* of action—specific ways that Liz might use her own insights in the paper. The partners honed in on one alternative: Liz might address two discourse communities right on her own campus, the art majors and the engineering students. Below, Liz *evaluates* this alternative, *justifying* why it might be a good solution.

Liz 27. *I..In fact, that's a good idea, because what–what I could be doing is taking something that I've read and applying it to something that's relative in our life or our community.* [G]

As this example illustrates, the three forms of reflective activity worked together in a typical problem-solving fashion: Patrick detected a problem, the partners searched for a solution (a way to use Liz's insights), and then evaluated and justified alternative ways to instantiate that new goal. The sustained reflection allowed the writers to work through these phases of problem solving and to invent new approaches, to transform and adapt their plans.

Although this productive problem solving was initiated by the supporter's evaluation (a familiar trademark of "peer critique"), Freedman, Burnett, and DiPardo (1987) have argued that students often have trouble with peer evaluations of this sort. Other students we observed found an optional, and perhaps equally valuable, way of initiating problem solving. In Example 4, Carter and Jennie show how reflection can be initiated when students juxtapose alternative plans with their own choices. Jennie's topic is "inaccuracy in story telling." She has already explained that when recalling past events, speakers rarely do so accurately because of their own biases. Below, Carter asks whether she will present a solution to this problem.

Example 4. Posing Alternatives:
Jennie (writer) & Carter

Carter 46. You're gonna have a definite conclusion...So, what are you gonna try to do in this conclusion? Are you gonna try to have a solution? [G/T]

Jennie 47. Um... [O]

Carter 48. ...Or what? [G]

Jennie 49. *No. See, I really don't think there is a solution to this problem. Well, I guess..In a way there is a solution if people are aware of what they do, they can try to stop it. But I don't think that's really practical. I think I'm just gonna tell about it. And just alert the listeners to past experiences, that they may not be hearing exactly what happened. I really don't think there is a solution to that.* [R/A/G]

Although Jennie justifies her approach, Carter continues to pose alternatives—whether she will give "helpful hints" for story tellers or help people express themselves better:

Carter 50. *So you're gonna try to give maybe ideas or whatever, to maybe help people communicate the past better? [R/A]*

Jennie 51. *Um. No.* [O]

Carter 52. *Or, give helpful hints or something?* [G]

Jennie 53. I don't know. Do you think that would be a good idea? [O]

Carter 54. I don't...Maybe if you like... [O]

Jennie 55. *'Cause is there really a solution to that problem?* [G]

Carter 56. *Well, give a general idea...Or, maybe give a general idea of how you can express yourself. Well, I guess that...* [G]

Jennie 57. I think I was gonna... [O]

Carter 58. *...That'd be very—too hard.* [G]

Jennie 59. *...I think I was directing this more to the listener...* [A/R]

Carter 60. Hm-hm. [O]

In responding to these alternatives, Jennie articulates her own audience and purpose—to direct the paper more toward the listener—a person who hears past experience stories rather than one who tells them. She compares and weighs these two alternative audiences, explaining why it would be more useful to direct the paper toward the listener rather than the speaker.

Jennie 61. *...A person hearing past events, rather than the speaker of them. And...(Excuse me) I'm trying to let the listener be aware of this, so that they can be more alert, and ask more questions, and just probe more to get the true story. Because, if you tell this to speaker..He might say...Oh, yeah, yeah..And just tell the story anyways. But if you tell it to the listener...They'll be, you know, more aware, and try to get the true story.* [A/R]

Up to this point, Jennie had not articulated a purpose—only a topic and thesis. She herself recognizes the value of this reflection in helping her flesh out weak parts of the writing plan:

Jennie 105. *Well, thanks Carter. Um. Well, I really do want to thank you because you helped me with my conclusion. Before, like I knew I was gonna have a concluding paragraph, but I didn't really... (Laughs) That sounds so stupid, I know. But...And you always gotta have one. But I didn't really for the speaker, so he would–Um–know how to, you know, what to put in it. And when you said... Are you gonna have tips for the speaker, so he would–Um–know how to, you know, correct for himself... I was thinking... Hm...is that the approach I want to use, or would I rather direct it more to the listener. And I decided that I think the listener would be better...* [R/A/T]

Although peer critique is probably the most commonly assigned form of collaboration and although this type of reflection has the potential to spark critical problem-solving, Jennie and Carter demonstrate another avenue into problem-solving. By posing alternatives rather than making direct criticisms, Carter helps Jennie focus on her own choices and to explain and defend those choices without becoming confrontational.

All of the previous examples demonstrate the cooperative, problem-solving nature of reflection, but the roles that students assume in this cooperative work are not always distinguishable. Although some of the literature suggests that reflection is initiated when alternatives and conflicts are triggered by a collaborative partner (and supporters in the previous examples did often act as triggers), the supporters in this study were not always the initiators. In fact, writers themselves initiated reflection over 40% of the time. In collaboration involving peers of equal status, both or either partner can play the role of evaluator, idea generator, and reason-giver. One writer, Bob, provides an example of self-initiated reflection. His thesis is that engineers need to communicate with people outside their field and to become more socially involved. Bob also wants to recommend humanities courses for engineer majors. But in Example 5, he notes a problem; he is not sure how these two ideas are related.

Example 5. Self-initiated Reflection: Bob (writer) and Fran

Bob 19. *See, the thing is...They don't seem to ask..It seems like it's starting to become...You know..I'm gonna talk about the engineer as having a role in society. And I'm going to talk about the engineer as taking courses besides science courses. I mean, those are two different things. I don't know how I can get them related to...so, maybe I could use one to support the other. But I'm not sure how.* [I]

Bob continues to point out problems and to find a way to relate the two ideas. Although his partner lets him off the hook, he continues to elaborate on weaknesses in his plan, noting that his suggestions are too obvious:

Fran 24. *Yeah. Maybe a really large part of it is just getting them to realize that there is kind of a gap between the way they talk about things and the way people can understand them, and once they realize that, maybe they can do it. But I don't know how..I don't know what you were planning to do. Well, it sounds like a good start.* [R/A]

Bob 25. *Yeah..I wish it was..I could go farther with it..I mean..It seems obvious...Everybody who's taking up engineering courses now probably already does know that or about how their work is becoming more involved with society...* [A]

Fran 26. Yeah. [O]

Bob 27. *I mean, I should be able to somehow show them something new. You know..I mean, even if I could just give it a different perspective.* [R]

Fran 28. *Well, maybe you're speaking to the engineers, giving them a perspective of like the rest of society. How society sees such technical people. I mean, I have friends that are scared of CIT* [technical] *majors.* [R/A]

This problem identification and evaluation help Bob monitor his work and set new goals for revising or generating new plans. He begins to articulate a new goal—that his paper should tell engineers something new—show them a new perspective they haven't yet considered. The partner (an art major) later supports his search for a new perspective, offering Bob the art community's view of technical students.

In each of the previous three examples, students are using reflection to construct and refine the larger rhetorical goals of their papers, mainly their purpose and audience. This was quite typical. When students discussed rhetorical purpose, they reflected on that purpose 73% of the time. They engaged in reflection 61% of the time they discussed generic purpose, and they reflected on audience and consolidations nearly half the time they discussed those aspects of the plan. As Table 2 shows, they found the need to reflect on these larger rhetorical concerns more often than they did other aspects of the plan such as topic information, their key point, and text conventions.

Blackboard	*% w/ Reflection*	*Reflective Turns*	*Total Turns*
Rhetorical Purpose	73	30	41
Generic Purpose	61	62	101
Consolidation	49	53	108
Audience	48	70	145
Text convention	32	62	192
Key Point	31	68	153
Information	25	68	268

Table 2. Percentage of time students reflected on rhetorical and other plans.

As we know, students often have trouble with knowledge-transforming tasks such as this one and often resort to reporting on what they know or have read. Scardamalia and Bereiter's evidence suggests that reflection can help students adapt their topic knowledge, to choose and evaluate the content of their papers given their rhetorical goals. However, in this context, one in which students had a very difficult time developing and consolidating rhetorical goals in the first place, many students used reflection not to evaluate and adapt topic knowledge so much as to formulate and refine their purpose and audience. Given the assignment, this strategy was a sensible use of reflective activity, a way to figure out and shape a unique purpose.

Conclusions

In interpreting the results of this study and its relevance to other settings, we must keep in mind that this collaboration, unlike some other unstructured collaborative techniques, focuses on rhetorical issues. Moreover, the use of dyads rather than larger groups may have itself encouraged or provided the opportunity for more sustained reflection. But even the structured collaboration these students engaged in didn't automatically elicit reflection. The transcripts suggest that collaboration does not necessarily produce reflection as many of its advocates assume. When we immerse students in talk about writing, they may become more aware of their plans and ideas, but awareness doesn't guarantee they'll reflect on those ideas. We discovered that collaboration is a complex social and cognitive activity in which students must interpret and negotiate the collaborative process itself as well as their purpose for writing. The ways in which students interpret these tasks can affect the criteria they use to reason about and evaluate their own process.

Our students' mixed approaches to collaboration suggest that some students need to see collaboration as a place to work on and refine ideas, as a means to problematize ideas rather than to recite them. Students like Mike and Yun Ho may need more explicit instruction in how to use each other as resources for refining and revising plans and in how to sustain this reflection so they can work on problems. Comparing and considering

alternative plans may be one accessible and socially acceptable way for students like Mike and Yun Ho to go beyond reciting ideas and to find their way into reflective problem-solving. We might model different approaches to collaboration and the roles and interactions that result from them.

But whether and how students engage in reflection also depends on how they view the purpose of the writing task. One problem with difficult writing tasks such as the one studied here, is that students often approach them in reductive ways. In this study, some students approached the assignment as a call for a thesis statement plus examples straight out of the reading, even though the assignment asked them to adapt and apply their reading for a purpose. As a result of this decision (or perhaps knee-jerk response to school writing?), many students either did not recognize the need to reflect further on their goals and plans, or they chose to gloss over them. Although we cannot ensure that students won't simplify complex writing tasks, we can do more to ensure that they know they are simplifying the task. One way to explicitly invite students to complicate task demands may be to complicate their notion of purpose. Bransford (1979) argued that "an important aspect of helping people learn to learn...involves the development of internal criteria that can guide their processes of self-evaluation" (237). We might contrast and model different interpretations of purpose for our students and the kinds of critical reflection and criteria that might accompany rhetorical purposes. Sometimes, simply making students aware of their own representation of a task and of other alternatives can itself produce changes in their approach to a task (see Flower et al, 1990).

This study also provides support that reflection is related to quality of planning in writing. Our descriptive analysis suggests why: sustained reflection helps students work through stages of problem solving—finding problems and weaknesses, searching for alternative approaches and testing and evaluating those approaches. Students in this phase of learning to plan used reflection to work out rhetorical problems in planning—problems frequently ignored or unrecognized by the students studied in other planning research. In particular, these students used reflection to struggle with purpose and audience, and to consolidate different aspects of their plans.

In summary, the cognitive literature suggests that reflection on one's own ideas and processes is a key component in problem-solving activities, especially in ill-defined or novel tasks that require planful coordination of goals, strategies, and outcomes. Some composition research suggests that reflection assumes an important role in the planning stage of composing during which writers initially retrieve content knowledge and formulate rhetorical goals for a paper. Our observations support the claim that reflection can play a role in planning complex texts; however, this paper qualifies that claim by suggesting some factors that may affect whether and how student writers will use reflection in productive ways. If we are to understand the role of reflection in collaborative writing tasks, then we need to understand how students represent and negotiate the social and cognitive aspects of those tasks in the very process of their learning.

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